

**MENG 4322 – CAD/CAM**

**Course Syllabus**

<b>Semester / Year</b>	Fall / 2024
<b>Catalog Description</b>	This course covers topics in object representation, geometric transformation, solid modeling, feature-based modeling, computer numerical control, kinematic modeling, and machining simulation and computer animation appropriate for the undergraduate level of work. Three hours of lecture per week.
<b>Prerequisites</b>	MATH 2415: Multivariate Calculus and MENG 1301: Engineering Graphics and Design.
<b>Section Number</b>	050, 051
<b>Instructor Name</b>	Dr. Shih-Feng Chou
<b>Contact Information</b>	3900 University Blvd., RBN 3005, Tyler TX. 75799 Phone: 903-566-6209 Email: <a href="mailto:schou@uttyler.edu">schou@uttyler.edu</a>
<b>Class Type / Instruction Mode / Location</b>	051: f-2-f / RBN 2012 050: f-2-f / HEC C203 (Synchronized Zoom Available)
<b>Class Time</b>	TuTh 2:00 PM – 3:20 PM
<b>Office Hours</b>	MoWe 10 – 11 AM and Th 3:30 – 4:30 PM or by appointment (Zoom: 842-1003-2901 #928234)
<b>No. of Credits</b>	3
<b>Required Textbook</b>	N/A
<b>Optional References</b>	(1) Autodesk Inventor 2025, A Tutorial Introduction, <i>L. Scott Hansen</i> , SDC Publications, ISBN: 978-1-63057-654-7. (2) Engineering Design with SOLIDWORKS 2024, <i>David C. Planchard</i> , SDC Publications, ISBN: 978-1-63057-627-1. (3) Machining Simulation Using SOLIDWORKS CAM 2023, <i>Kuang-Hua Chang</i> , SDC Publications, ISBN: 978-1-63057-570-0. (4) Lecture slides.
<b>Additional Rules and Requirements</b>	(1) A laptop that is able of: (a) accessing UT Tyler virtual desktop in the classroom and/or (b) running stand-alone Autodesk Inventor 2025 and SolidWorks 2024. (2) AI statement: To best support student learning, please complete all graded assignments by yourself to assist in course learning. This exclusion of other resources to help complete assignments includes artificial intelligence (AI). Refrain from using AI tools to generate any course context (e.g., text, video, audio, images, code, etc.) for an assignment or classroom assignment.



<b>Evaluation Method</b>	Inventor Drafting: 12%; SolidWorks Drafting: 12%; SolidWorks CAM: 6%; Midterms: 60%; Final Exam: 10%																																																																																					
<b>Grading Policy / Scale</b>	Letter grades, scale: A: 90 – 100, B: 80 – 89, C: 70 – 79, D: 60 – 69, F: < 60																																																																																					
<b>Important Events / Dates</b>	9/9/2024 (Mo): Census Date 9/24/2024 (Tu) and 9/26/2023 (Th): Midterm#1 10/29/2024 (Tu) to 10/31/2024 (Th): Midterm#2 11/4/2024 (Mo): Last day to withdraw from one or more classes 12/3/2024 (Tu) to 12/5/2024 (Th): Midterm#3 12/10/2024 (Tu): Final Exam																																																																																					
<b>Attendance / Makeup policy / other rules</b>	<ol style="list-style-type: none"> <li>Attendance will be checked regularly using sign-in sheets.</li> <li>No make-up assignment(s) after posting grades.</li> <li>No email submission of assignment(s). All assignments must be submitted to Canvas for grading.</li> <li>Student with SAR status should contact the UT Tyler Office of Student Accessibility and Resources for exam arrangements.</li> </ol>																																																																																					
<b>Course Learning Objectives / ABET &amp; PEOs Relation</b>	By the end of this course, students will be able to: <ol style="list-style-type: none"> <li>Recognize engineering drawings with geometric representations.</li> <li>Create CAD models for parts assembly using constraints.</li> <li>Develop concepts and steps in machining simulations.</li> <li>Demonstrate the ability to use commercial CAD/CAM packages.</li> </ol>																																																																																					
<b>Tentative Topics / Course Plans</b>	<p>Engineering Designs and Drafting; Tolerance Graph Analysis; Geometric Modeling; Geometric Tolerancing; Part Assembly; Basic Machine Calculations; Process Planning and Quality Control.</p> <table border="1"> <thead> <tr> <th>Week</th> <th>Date</th> <th>Tuesday Topics</th> <th>Date</th> <th>Thursday Topics</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>8/27</td> <td>Syllabus and Drafting Policies</td> <td>8/29</td> <td>Inventor#2: Getting Started on CAD</td> </tr> <tr> <td>2</td> <td>9/3</td> <td>Introduction to CAD</td> <td>9/5</td> <td>Inventor#4: Learning More Basics</td> </tr> <tr> <td>3</td> <td>9/10</td> <td>Engineering Design and Drafting</td> <td>9/12</td> <td>Inventor#6: Create a Detail Drawing</td> </tr> <tr> <td>4</td> <td>9/17</td> <td>Dimension and Tolerance</td> <td>9/19</td> <td>Inventor#7: Advanced Drawing Procedures</td> </tr> <tr> <td>5</td> <td>9/24</td> <td><b>Midterm#1</b></td> <td>9/26</td> <td><b>Midterm#1</b></td> </tr> <tr> <td>6</td> <td>10/1</td> <td>Geometric Modeling I</td> <td>10/3</td> <td>SolidWorks#1: Advanced Drawing</td> </tr> <tr> <td>7</td> <td>10/8</td> <td>Geometric Modeling II</td> <td>10/10</td> <td>SolidWorks#3: Part Assembly</td> </tr> <tr> <td>8</td> <td>10/15</td> <td>Geometric Modeling III</td> <td>10/17</td> <td>SolidWorks#5: Introduction to Stress Analysis</td> </tr> <tr> <td>9</td> <td>10/22</td> <td>Geometric Tolerancing</td> <td>10/24</td> <td>SolidWorks#7: Introduction to Design Accelerator</td> </tr> <tr> <td>10</td> <td>10/29</td> <td><b>Midterm#2</b></td> <td>10/31</td> <td><b>Midterm#2</b></td> </tr> <tr> <td>11</td> <td>11/5</td> <td>Introduction to CAM</td> <td>11/7</td> <td>CAM#1: Drilling, Milling, and Turning</td> </tr> <tr> <td>12</td> <td>11/12</td> <td>Basic Machine Calculations</td> <td>11/14</td> <td>CAM#3: Machining</td> </tr> <tr> <td>13</td> <td>11/19</td> <td>Process Planning and Quality Control</td> <td>11/21</td> <td>CAM#5: Machining Example</td> </tr> <tr> <td>14</td> <td>11/26</td> <td><b>Thanksgiving Break – No Class</b></td> <td>11/28</td> <td><b>Thanksgiving Break – No Class</b></td> </tr> <tr> <td>15</td> <td>12/3</td> <td><b>Midterm#3</b></td> <td>12/5</td> <td><b>Midterm#3</b></td> </tr> <tr> <td>16</td> <td>12/10</td> <td><b>Final Exam</b></td> <td></td> <td></td> </tr> </tbody> </table> <p>(Dr. Chou reserves the right to change schedule in course plan.)</p>	Week	Date	Tuesday Topics	Date	Thursday Topics	1	8/27	Syllabus and Drafting Policies	8/29	Inventor#2: Getting Started on CAD	2	9/3	Introduction to CAD	9/5	Inventor#4: Learning More Basics	3	9/10	Engineering Design and Drafting	9/12	Inventor#6: Create a Detail Drawing	4	9/17	Dimension and Tolerance	9/19	Inventor#7: Advanced Drawing Procedures	5	9/24	<b>Midterm#1</b>	9/26	<b>Midterm#1</b>	6	10/1	Geometric Modeling I	10/3	SolidWorks#1: Advanced Drawing	7	10/8	Geometric Modeling II	10/10	SolidWorks#3: Part Assembly	8	10/15	Geometric Modeling III	10/17	SolidWorks#5: Introduction to Stress Analysis	9	10/22	Geometric Tolerancing	10/24	SolidWorks#7: Introduction to Design Accelerator	10	10/29	<b>Midterm#2</b>	10/31	<b>Midterm#2</b>	11	11/5	Introduction to CAM	11/7	CAM#1: Drilling, Milling, and Turning	12	11/12	Basic Machine Calculations	11/14	CAM#3: Machining	13	11/19	Process Planning and Quality Control	11/21	CAM#5: Machining Example	14	11/26	<b>Thanksgiving Break – No Class</b>	11/28	<b>Thanksgiving Break – No Class</b>	15	12/3	<b>Midterm#3</b>	12/5	<b>Midterm#3</b>	16	12/10	<b>Final Exam</b>		
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